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Swine Erysipelas.

(*Contributed*).

Hutyra and Marek define swine erysipelas as an acute, septicæmic infectious disease of young hogs caused by a very fine, rod shaped bacterium (*B. erysipelatis suis*) which is found in the blood of affected animals.

The exception one would take to this definition is that the disease is not confined to young pigs, but appears to attack all classes, suckers, small stores, strong stores, fatting pigs, sows, and boars; pigs at grazing, and penned pigs.

In the annual reports of the Chief Veterinary Officer of the Ministry of Agriculture for 1913, 1914, and 1915, much information is given as regards the distribution of the disease in Great Britain, and in one of these reports Stockman states:—"The causal organism is practically ubiquitous, lives a saprophytic existence in the soil, the diseased pig being only one factor in the upkeep of the disease."

Bearing this statement in mind, it is not to be wondered at that the disease is prevalent throughout the whole of Great Britain, and that the monthly incidence of the disease shows a steady increase in the number of outbreaks in the summer, probably due to the increase in the number of bacilli in the soil during the warm season.

As a rule, the disease exists in an enzootic form, but not infrequently as an epizootic, such as happened in the Chatteris district in 1905, and, one hears again this year, in the Eastern Counties.*

The prevalence of the disease in the Eastern Counties probably follows potato cultivation. In the fruit growing districts of Worcestershire disease is frequently seen in pigs grazing on the wind-fallen fruits.

The swill tub is a frequent source of infection, owing to the swill becoming contaminated from potatoes carrying infected soil. This accounts for the outbreaks in cottagers' pigs where the swill tub is used as a depository for all garden refuse.

The causal organism has been found in the intestines and tonsils of apparently healthy pigs, and Pitt expresses the opinion that its presence may have some bearing on the production of immunity in pigs thus harbouring the organism. At the same time, there is the risk of such harbourers of the organism acting as introducers of the disease to free herds. Also, given factors which reduce the resisting powers of the body of a harbourer, there appears no reason why such harbourers should not fall with the disease themselves.

Natural infection usually occurs through the intestinal canal, but, of course, may occur less frequently through skin injuries. Realising the routing propensities of the pig, the fact that it is such a frequent harbourer of intestinal parasites with their accompanying injuries to the mucous membrane, and that the bacillus is so frequently a normal inhabitant of the intestine, it is not to be wondered at that infection *per os* is the common method.

In what one may describe as peracute cases, the symptoms are of very sudden onset, and death takes place in a few hours; in fact, signs of illness are seldom seen, and the first intimation of anything being wrong is the finding of a dead pig. These cases are probably most frequently seen in adult pigs, *post-mortem* examination revealing an extensive blood splashing of the heart wall with an increase in the amount of pericardial fluid. Such cases are very often ascribed to syncope, the true cause of death not being realised. If one is fortunate enough to see these cases during life the temperature will be found to be very high.

The acute cases are ushered in by high fever, rigors, often vomition, and great disinclination on the part of the patient to move. Later there may appear a deep violet discolouration of the skin chiefly affecting the buttocks, thighs, body, and ears, which accounts for the name of "PURPLES," which is sometimes given to the condition. In sucking pigs and small stores gangrene of the tips of the ears and tail sometimes supervenes with the consequent shedding of the ears and tail. In fully grown pigs the whole of the skin of the back has been known to become gangrenous and to have been shed, the appearance being somewhat like the carapace of a tortoise. The death rate in these cases is high.

Probably the commonest form seen is the subacute type known as "DIAMONDS" or "NETTLERASH." Here, again, there is suddenness of onset, accompanied by fever, inappetance, disinclination to move, and the appearance on the skin of numerous more or less diamond shaped, violet coloured, raised plaques, scattered over the cutaneous surface, measuring from one to two inches across. Recovery from this type is probably the rule.

Recovery from any of the previous types may, and does, in a fairly large number of cases, leave us with a chronic case, the so called "VERRUCOSE ENDOCARDITIS," which, as the name implies, leaves the subject with vegetations on one or other of the heart valves. These cases occur, as a rule, in fully

grown pigs, though of course, it will be realised that they may be seen in any type of animal.

Recovery from an attack of the disease frequently leaves pronounced unthriftiness for some considerable time, and in store pigs articular rheumatism is probably a sequel.

Treatment resolves itself into:—

1. Remedial.
2. Preventive.
3. Inoculative.

With regard to 1, and bearing in mind that one is dealing with a septicæmia, with a weakened heart-action, quiet is essential. On no account should any attempt be made to drench an ailing animal, as such procedure usually means a sudden death. The high fever is accompanied by constipation, and thirst, and probably the best remedy to combat this constipation is calomel placed on the tongue with a spoon or spatula. A bowl containing some sloppy bran is all that is required for food and drink. As a rule for the first 24—48 hours the patient will lie quiescent in the sty, showing no inclination for food or drink. On no account should the patient be disturbed after the preliminary dosing with calomel. At the end of this time the patient will, if recovery is taking place, come out for a drink, only to return immediately to lie down. At the end of three or four days the appetite will be returning, and with a few days more light dieting recovery will practically be complete.

Preventive measures consist in thorough disinfection of infected sties, troughs, utensils, and any materials which may have been contaminated. In cases where the swill tub is presumably infected it may be necessary to destroy the contaminated swill, and disinfect the tub. Pastures which are suspect should, of course, be rested.

With reference to inoculation: two methods are used:—

(*a*) Anti-serum obtained from horses.

(*b*) A combination of anti-serum and pure cultures of the bacillus.

The recommendations contained in the Ministry of Agriculture leaflet on swine erysipelas are as follows:—

1. It is not advisable to resort to inoculation of pigs on non-infected premises unless the circumstances are such that owing to the proximity of acute outbreaks it appears practically impossible to prevent the disease being introduced by methods of rigorous isolation, because the operation might possibly be the means of infecting the premises.

2. Should the disease appear, however, all the pigs should, with the least possible delay, receive a dose of serum, and those in which the temperature is normal should be removed to non-infected sties on the same premises, if this be practicable. Ten days afterwards the vaccination proper may be practiced after the method of Leclainche (serum and virus, then virus alone) on those animals still showing a normal temperature. The pigs with high temperature should be returned to the infected sties, and if their value warrants it they should be treated by injections of serum alone. On no account should they receive the culture. If it be found impossible to separate the sick from the healthy the operations should be carried on in the infected sties.

3. Although this disease can to a large extent be successfully combated by inoculation, it must not be thought that measures of isolation and sanitation can be dispensed with. While the outbreak lasts no new pigs should be brought in, and none should leave the premises except for slaughter under the most rigorous precautions against the disease being conveyed to other premises. If a pig owner finds that the disease reappears annually on his premises he should resort annually to preventive inoculation, timing the operations so as to have his animals immunised before the season of greatest activity. He should also remember that the complete eradication of the disease from his premises will be greatly facilitated by keeping his pigs in sties which can be properly disinfected.

Although swine erysipelas can hardly be regarded as a very fatal disease of pigs, in Great Britain at least, the Ministry has been informed that it often interferes materially with the marketing of pigs, since it frequently attacks them and causes considerable emaciation close to the time when they are expected to be ready for the market. In such cases owners have been advised to immunise their pigs by methods of inoculation about three months before they are expecting them to be ready for the market. From information received from those who have put this advice into practice, it would appear that the adoption of preventive inoculation has given excellent results.

The economic loss to the pig industry in Great Britain from this disease must be somewhat considerable; in fact, some authorities place the loss as high as, or even higher than, that from swine fever. As the disease is not notifiable, there is no method of ascertaining the truth of these statements, and whereas the losses from swine fever probably occur chiefly in the store population, the losses from swine erysipelas occur in the larger pigs, and are thus probably realised more by the unfortunate owner.

In the treatment of swine erysipelas there would appear to be a useful field open for the general practitioner, and one worth consideration in the heavily populated pig districts.

It is hoped that this short article will stimulate practitioners with an extensive knowledge of the disease to give the profession the advantage of that knowledge through the Veterinary Press.

In conclusion, it might be as well to recall the fact that this disease is one which serves as one of the links binding the Medical and Veterinary Professions, being one which, in many instances, is readily communicable to man.

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*In this connection, we reproduce the following letter which appeared in *The Times* of March 23rd:

TO THE EDITOR OF THE TIMES.

"Sir,—I noticed in the Press that £295,000 has been paid for slaughtering cattle with the foot-and-mouth disease. I do not think that many of your readers are aware that

a sum far exceeding this amount is lost annually through pig erysipelas, of which amount the pig-producer is the loser. During the last three or four years many a smallholder and small farmer has been almost ruined through losing 40 per cent. to 50 per cent. of his pigs with this complaint, which might easily be remedied if the Ministry of Agriculture would only stock vaccine and serum which, if given to the pigs in proper proportions, will make them immune from this disease for six months. At the present time this remedy is only obtainable from the Continent, no one stocking it in England: consequently, when an outbreak occurs half the pigs die before the inoculation can be performed. If this remedy were stocked by all the principal veterinary surgeons, the pig population would very soon be doubled in this country.

"One cannot estimate the annual loss in pigs through this disease; a veterinary friend of mine says it runs into millions. If the loss all over the country compares with the loss in the Eastern Counties, probably he is correct. It is killing the pig industry, as it gets more virulent every year. During the last three years I believe every farmer, smallholder, and cottager, has either lost all his pigs or the majority. of them, and all pigs that survive a bad attack might as well die, because they never afterwards pay for the food they eat. After pigs have had this complaint they are liable to die suddenly from heart failure or they are very crampy, one week appearing well, the next so stiff they can hardly move. Sows, too, will not have healthy pigs. I have seen many litters die within ten days of birth through contracting the disease from their mothers. On one small farm within three months 15 litters were lost in this manner. I have just lost six litters of pigs and the sows have always been healthy, but I have just ascertained that the boar had a slight attack of erysipelas when he was 14 weeks old, and I find that none of his pigs up to the present have lived.

"This disease in some parts of the country is called 'Diamonds.' It generally appears in its worst form in May and June, when farmers clear out their crewe-yards; the microbe, being at the bottom of the manure, becomes most active as soon as the yards are cleared. I would advise every one to have his pigs inoculated before removing the manure, and afterwards to have all places thoroughly disinfected.

"I am not aware of any pigs being inoculated for this complaint until after the war, and then it was first introduced here by a German, and at the present time only serum is stocked in England, and serum alone will only keep the pigs immune for about 14 days. I thoroughly believe that if all pigs at 12 weeks old were inoculated with a mixture of culture and serum, and all sows and boars inoculated for six months, we should soon see the pig population in this country doubled, and, moreover, we should not have the complaints that our pigs were not the right sort for bacon, as no pig after it has once had erysipelas will grow into a proper bacon pig. Now, I ask all pig-breeders, through their societies and Farmers' Union, to impress upon the Ministry of Agriculture to see that this remedy is stocked by their officials all over the country."—Yours faithfully,

FREDERICK HIAM.

42 Station Road, Cambridge.

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Commenting on the above letter, the Agricultural Correspondent of *The Times*, says:

"The letter on 'Pig Erysipelas' which Sir Frederick Hiam contributed to *The Times* of March 23 has aroused great interest in the suppression of this disease. But it has done more; it has brought to light a state of things in many districts far more serious than had been suspected. Herds of pigs in many counties, from Kent northwards, have been suffering from erysipelas in a degree that probably was not fully realised in the affected areas themselves, since, naturally, owners have been diffident in making known the presence of the disease on their premises. The letter from Sir Frederick Hiam has induced many to break silence and appeal for action for the suppression of the malady.

(*Continued at foot of next column.*)

The Sex Glands.*

By W. F. ASTON, M.R.C.V.S., Derby.

The objects of this brief paper are to bring before your notice some of the latest beliefs and theories regarding the functions of the sex glands, and to show how everyday manifestations of nature are used to prove the theories that are adopted. Particularly does this apply to us as veterinarians, for in our practice we see, and to some extent control, the destinies of such natural malformations, that one would have thought from the veterinary profession would have come the great knowledge of the sex organs, the characters which they show, the altered characters after extirpation—the characters which can be transmitted and on which side. For such information as I offer you, I am indebted to Swale Vincent's *Internal Secretions*, Blaire Bell's *Sex Complex*, and particularly Lipschutz's new book on *The Internal Secretions of the Sex Glands*.

The sex glands consist of testis, prostate and seminal vesicles in the male, and ovaries in the female. There are, of course, other glands acting on these—such as suprarenals, pituitary, pineal, thyroid, thymus, uterus and mammary, by secretions formed in them and carried by the blood—the whole maintaining the hormonic balance of the body. I propose to-day to deal with testis and ovary.

For the benefit of those who have long left college, let me briefly describe the histological characters of testis and ovary, as it will assist to an understanding of the following remarks. The testis varies in shape and size according to the animal, but the general histology recognises—on the outside, a serous coat (tunica vaginalis) and inside this a white capsule (tunica albuginea), which sends in trabeculæ dividing the gland into lobules and attached at its upper margin to epididymus.

The glandular part is filled with seminiferous tubules consisting of a basement membrane and several layers of epithelial cells—the ones near the basement membrane being clear and cubical—spermatogonia. Here and there between these are the large sustentacular cells of Sertoli. Next

(*Continued from previous column.*)

"It is understood that the Ministry of Agriculture appreciates the gravity of the situation and is working in every possible way to free pig owners from this scourge. It appears that the disease can be prevented or rendered comparatively harmless by inoculation, and the Ministry is endeavouring to ensure that there shall be available at suitable local stations, supplies of the necessary serum or vaccine for preventive or curative purposes. The activity of the disease has been especially severe in the case of smallholders, some of whom have had all their pigs destroyed. The resulting loss has not been restricted to the value of the pigs. The land has suffered also, since the empty pens or sties has meant that no manure has been made for it and fertility is lowered in consequence.

"Sir Frederick Hiam has expressed his willingness to give £500 towards the expenses of manufacturing the vaccine at Cambridge."

*Presented to the Derbyshire Division at Derby on April 21st, 1925.

internally are a layer of spermatocysts, and most internally a layer of small-celled spermatids becoming spermatozoa.

The ovary is covered by a layer of short columnar cells—the germinal epithelium. Inside this is a stroma of fibrous tissue with interstitial cells and many spindled-shaped cells. The surface part of this stroma is covered with vesicles—each of which is a graffian follicle. The graffian follicle has a wall formed from the stroma—the wall is the theca folliculi. Inside this is an ovum, epithelium forming the membrana granulosa and lining the follicle and folding to form the discus proligerous around the ovum, and between these folds of epithelium is the liquor folliculi.

It is well known that the testis and ovary are great determining factors in the formation of sex and that these effects are produced to some extent by hormonic influence. The characters, physiological and morphological, which depend on the sex gland—that is the sex characters—may be grouped into a genetic system as primary and secondary, *i.e.*, I propose to show :—

(1) That development in the individual of sex characters is influenced by the glands, and persistence of such characters depends on the presence of the glands.

(2) On what characters the sex glands exert all or partial effects.

(3) How far genetic dependence goes, *i.e.*, sex characters without sex glands.

So far I have assumed two sexes as opposite as the poles but, as you are aware, transitions between male and female types occur, and that male and female organisms are not mutually exclusive in the same individual—as in the hermaphrodite. It is more probable that there is an asexual type common to both, and such an hypothesis will be the main theme of my paper.

Let us consider the results of castration. Experiments on cattle, rats, rabbits, and dogs have shown that the removal of the testis definitely affects the genital organs. According to the age at which castration is performed, whether very young or close at puberty, so development and retrogression of the penis and uterus occur. With regard to the effect on the mammary gland, while claims have been made that, in the ox, growth of the nipples and gland tissue may occur, there is considerable doubt regarding this, and what extra size is present is probably due to fat deposit. It has been claimed that milk secretion may occur after pre-puberal ovariotomy, the main factor affecting such claims depending on the time at which castration occurs and also the extent of hormonic development in the individual.

Skeleton formation is markedly affected, and different parts react in different ways,—the bones of the extremities are longer—particularly is this so in the case of the ox. You are well aware of the different appearance of the skull in the castrate—in fact, the castrated ox and cow lead to a common type or convergence of the sexes. The pelvis in the developed ram and ewe exhibit marked differences, while the pelvis of the castrate of both sexes of the same age become almost identical. There is little development in animals of characters supposedly characteristic of the other sex, as is supposed to occur in man, the change in man being a movement to a common asexual form.

Changes also occur in the pituitary, thyroid, thymus, etc., and these in part account for the increased adiposity of the castrate.

Besides these morphological changes, psycho-sexual ones may be noted. For instance, pre-puberally castrated rats recognised a female on heat and followed her, and even made attempts at coitus, as we have known bullocks do. The rat will not fight as the normal male does, though they will sometimes fight together in the presence of a female. Post-puberally castrated animals retain their vigour for varying periods of time—horses for two or three years even. According to French veterinarians not more than two per cent. continue to show sexual activity and even undergo coitus with sterile ejaculations.

It seems certain that the sex glands are responsible for the development of psycho-sexual behaviour and its continuance, and that the persistence of general sex characters depends on the presence of the sex gland, but that its influence does not cover all sex characters.

May we suppose that the somatic basis is sexually undifferentiated—that it is asexual rather than bisexual and this asexual body is changed by some influence during embryonic life?

How can the sex gland exert its influence on the body for the production of sex characters? Two ways are possible—by nervous reflexes or by an internal secretion into the circulation. Experiments in transplantation and injections have shown that the sex glands act by an internal secretion. An internal secretion is evolved by cells of glandular type and has a physiological utility and specific chemical composition and is excreted directly into the blood stream. It is special to the gland producing it and differs from such chemical stimuli as CO_2, which is secreted by all cells during katabolism and acts directly on the respiratory centre.

If into a castrated animal a testicle is transplanted and grafted, the sex characters which had deteriorated or changed, return: showing that, wherever the graft be placed, it has provided the body with some substance which influences the sex characters. It may be that nerve fibres have grown into the graft. By the injection of material from the glands into a suitable subject, it can be shown that to some extent these sex characters are influenced, so proving that the influence must be exerted by chemical energisers.

While sex characters may not wholly be due to the influence of sex glands alone, but to the whole polyglandular internal secretory system, the gonads exert a sex-specific action as opposed to thyroid or adrenal action, and no such changes can be produced by any interference with any single gland or combination of other glands as are produced by testis and ovary alone.

It is most probable that the internal secretion of the testicle, is secreted by the interstitial cells. For instance, in the rig-horse, which shows all the characteristics of the stallion, even when the normal testicle, if present, has been removed, there will be found in the retained abdominal gonad only interstitial cells and cells of Sertoli, with or without generative cells in a state of degeneration. It is suggested that this degeneration may be due to the difference of temperature of scrotum and abdomen—the higher temperature preventing the final stages of spermatogenesis.

By experiment it has been shown that small particles of the male gonad are sufficient to produce sex characters and provided sufficient hormone is produced, the effect varies little. This is the law of "All or nothing" as regards testicular hormone secretion.

Puberty marks the acceleration of sex characters to full development and at this stage in many animals it can be shown that the interstitial tissue is relatively increased. It is possible that this activity may be stimulated by onset of spermatogenesis and, in discussing the ovary, I shall show a definite anology to such a process.

On the histology of the ovary, I made mention of a fibrous stroma and that in it are interstitial cells. These vary in number greatly in the different mammalia and in some species there is considerable doubt as to their presence. It is admitted that there is an interstitial tissue, however, fragmentary, and that it originates from the spindle-shaped connective tissue cells of the theca interna, which become spherical and swell. At the same time a degeneration goes on in the cells of the follicle, such degenerating cells being reabsorbed, and vascularisation of the mass occurring. Such an atresia occurs in many ovarian follicles in all mammals and in those in which definite interstitial tissue is absent—these atresia take its place. The interstitial cells can also be evolved from the corpus luteum, so one can realise how important even these bodies may be.

Unlike the testicles, it will appear from the varying amount of hormone tissue present at different stages in the ovary that the quantity of ovarian hormones varies at different periods, depending on the number of atresic follicles present. Also after unilateral ovariotomy it is usual to find that the remaining ovary doubles its size as a compensatory process,—quite different from the testicle.

From such facts it emerges that the ovarian function is controlled rather by quantitative laws, which reach their climax when the corpus luteum of pregnancy is formed—to recede with its degeneration and to reach another climax with the start of the next pregnancy. It must have been noticed by all that female characteristics vary over a wider range than in male, and this is doubtless due to the follicular development of the ovary and consequent varying hormone production.

When we consider the sterility problems, the corpus luteum is an important factor. Let me remind you that there are two forms—the corpus luteum graviditatis and corpus luteum menstuationis. There is no essential difference between these, except that the corpus luteum graviditatis persists. The corpus luteum is formed by the hypertrophied epithelial cells of the membrana granulosa and those of the theca interna, which intermingle after rupture of the membrana (granulosa). Connective tissue and blood vessels grow into the mass and the whole becomes vascularised and a typical glandular structure. Later, fat appears—often the yellow lutein. The corpus luteum graviditatis of the cow may be much larger than the ovary itself, so that, since ovulation is inhibited by the presence of the corpus luteum, it is obviously important to be able to detect its presence. Ovulation can occur even in pregnancy, if the corpus luteum be destroyed. It has been claimed that the corpus luteum has a secretion of its own, and that it acts on the uterus. Frænckel stopped pregnancy in rabbits by destroying the corpus luteum during the first six days, the womb returning to the normal Menstruation, or heat, can also be prevented by cauterising the fresh corpus luteum menstruationis. The function of the corpus luteum appears to be to prevent the return of the uterus to an infantile state or atrophy, and to render possible the transformations of the mucosa necessary for the fixation and growth of the fertilised ovum.

It has been proved that the placental growths on the uterine mucosa cause the persistence of the corpus luteum which inhibits further ovulation and ensures the pregnancy. It has been found that hypertrophy of the mammary gland and milk secretion can take place without a corpus luteum being formed, so that it is highly probable that whatever internal secretion the corpus luteum elaborates, is identical to a great part in the ovarian hormone. In bitches the uterus and mammary gland undergo changes similar to those of pregnancy during heat—but not to the same development. Retrogression sets in thirty days after ovulation, but the mammary gland may remain in a state of activity for a longer period—when such occurred there was always retention of the corpus luteum menstrationis. This elucidates the not uncommon phenomenon of bitches secreting milk at the end of a psuedo-pregnant period.

Changes in the ovary during pregnancy must produce changes in other internal secretory organs and the whole cycle will affect such factors as mammary secretion, psychical changes, etc. This would entail a paper to itself.

It has also been shown that all stages of development of the graffian follicle to the corpus luteum can produce internal secretions varying according to the respective stages. Premature or late disappearance of the corpus luteum will produce intermittent periods of heat, and is one of the cardinal signs of ovarian disturbance.

As regards the sex homones—it is of interest to consider whether the male and female are the same. It will be shown that each is specific, by the experiments on feminised males and masculinised females.

If the castrated male has ovarian grafts inserted, one gets teat growth and even milk secretion which, on degeneration of the graft, results in a return of the parts of those of the normal castrate. There is also a marked control as to body weight of such masculinised females and in such an animal a definite growth of the clitoris is obtained. So that the biochemical stimulus of each gland must be specific.

While the testis and ovary can, of their own, affect sex characters, you will realise that none of the other internal secretory organs have such power, except, to some degree, the adrenals. This will concern us in discussing the problem of intersexuality.

There are two intersexual forms—the true hermaphrodite, where, within one organism, are combined both somatic characters and generative cells of both sexes—and psuedo hermaphrodites, where only both somatic characters appear. Many invertebrates are true hermaphrodites. Since there is an antagonism between testis and ovary, as previously shown, true hermaphrodites are very rare in mammals.

When both glands are implanted in a castrate, we see growth of both sex characters—even milk secretion and well developed penis occurring together—depending on the quantities of hormones produced, should one or other sex predominate. Psycho-sexual behaviour shows this—for at one period the " would be male " will act as a male and in such a short period as an hour change and act as a female.

Intersexual forms occur in pigs, goats, horses and cattle and while external signs may favour one sex more than the other, ovarian testes may be found, and have been. Such an example of intersexuality as the freemartin is of particular interest to us. Here the twin male is perfect and the co-twin female is not. The organs in the female may vary from being very rudimentary to well developed, but the female twin is only normal when there is no blood connection of the male fœtus. The female fœtus undergoes masculinisation after having begun its asexual differentiation as a female, for male hormones being first formed, affect to a varying degree the feminality of the freemartin; showing that variations in time and quantity of the hormones of both sexes will cause an extraordinary variability in intersexual types!

I have suggested that there is an asexual soma. Then what produces sex differentiation? If it is hormone production only, one would expect the freemartin female to be a male, as male hormones first appear in its blood. Sex differences must arise at an earlier time than that of hormone production—such differences can be found in cattle embryos at the end of the second month. Sex may be determined before fertilisation or afterwards, and since various external factors can affect the sex ratios, it seems probable that determination must take place after fertilisation. If the sex of a fertilised egg is determined there must be a biochemical difference between male and female fertilised eggs and this can be compared with the transference of inherited character, such as pigmentation, etc. Such a chemical difference fixing the somatic gonads acting on an asexual body would then account for the rise of different sex glands which, on their commencing hormonic action, would so fix the sex characters.

There is no doubt that the time of onset of hormonic action varies in individuals and that this variation accounts for some apparently male sex characters appearing in the female or *vice versa*—such apparently male characters being really asexual ones—common to both sexes.

It is of great interest to consider what secondary sex characters are transmitted and by which sex. It appears certain that the male can transmit female qualities as, for instance, only by the cock of high laying strains can this high fecundity be transmitted and not by the hen. Such inheritance is probably transmitted as the power of the body to react to various sex stimuli. Similar transference of qualities such as milk production, are transmitted by the bull. This knowledge is of the greatest value to the breeder.

With regard to feeding and the injection for medicinal use of gland products—particularly these sex gland products—it appears to me that until such medication can be controlled and brought to the same quantitative rate and rhythm as that of the secretism of the gland, we shall not meet with much success in their use. It behoves all of us who use such preparations to extend very careful observations, so that any *data* arising will enable us the better to understand the working of these glands.

Milk Fever—Another Theory.

By W. Peirson, B.Sc., M.R.C.V.S., Crieff.

It is hoped that the recent articles on milk fever will stimulate others to give their views and criticisms for the elucidation of this problem. In all of these publications the writers are agreed that the symptoms are due to *some toxin*, and that there is present *an acidosis*.

In the article by Mr. L. P. Pugh, B.Sc., the theory is put forward that " the majority of the symptoms of milk fever are caused by botulinus-like toxins derived from the alimentary canal." If this were so, I suggest that inflation of the udder would have no effect upon the *bacterial* toxin circulating in the system. The toxin of the *B. botulinus* being very powerfully toxic, it would take an anti-toxin to combat its effects.

Professor Gaiger, in his paper on *B. botulinus*, read at the last National Veterinary Medical Association Congress, states: " That there is insufficient evidence as yet to inculpate the organism (*B. botulinus*) as the causal factor in diseases of animals by growing and producing its toxins in the alimentary canal, and that the weight of evidence is against the *B. botulinus* being able to grow and produce its toxins in the tissues and fluids of the living animal, as true pathogenic organisms do."

In short, the botulinus toxin, to be effective, must be produced outside the animal's body in the foodstuffs and thus fed to the animal. Therefore, if the

symptoms of milk fever were due to botulinus toxin all the animals fed similarly in the same byre should show symptoms of milk fever. This, however, does not occur.

Professors Dryerre and Greig, in their article, state that they believe the symptoms to be due to an accumulation of a toxin, guanidin. The symptoms, as described in their paper, lead me to believe that they are not dealing with simple milk fever, but that they are complicating the elucidation of the simple milk fever problem with a theory which appears to have more bearing upon the etiology of eclampsia and "stomach staggers."

At or near parturition the writer recognises two types of milk fever—simple milk fever, and milk fever with eclampsia. The main distinguishing features are :—

In milk fever simple—

(1) No tetany (or tetanic convulsions or spasms).
(2) As the disease progresses temperature always falls below normal.

In milk fever with eclampsia—

(1) Tetanic convulsions or spasms always present.
(2) Temperature always above normal.

In a recent article reprinted in the *Veterinary Record* (O. Menig in the *Journal of the A.V.M. Association*) the renal arteries of an experimental animal were clamped, and symptoms similar to those of milk fever developed. The clamps were removed, and the usual treatment applied with a successful result. With all respect to the experimenters' endeavours, I venture to suggest that this was a urœmia, and that the removal of the clamps alone, plus some heart stimulant, would have had the same effect as the treatment applied.

Again, if the symptoms of milk fever are due to a result of lowered blood pressure, any heart stimulant or drug to increase the blood pressure should be sufficient to counteract the symptoms. Stimulants have, however, been used and have proved of no avail. I would suggest that this acidosis is not due to lowered blood pressure, but that the lowered blood pressure is the result of the acidosis.

With Mr. Scott, of Bridgwater, I agree that the toxin, if such exists, is a product of metabolism and is elaborated in the mammary gland. I do not agree that the milk is toxic, for I have experimented in a similar fashion without any undesirable effects, and I suggest, with all respect, that Mr. Scott suffered from indigestion.

There has also been some discussion in the *Record* as to other diseases having similar symptoms, but in no way connected with parturition. Some of these diseases respond to similar treatment, but it does not necessarily follow that the causes are the same. By dealing with more than one disease at the same time we are complicating matters, and to avoid this the writer puts forward what he considers to be the outstanding features met with in cases of *simple* milk fever, the symptoms, and a theory with explanation as to the cause of these symptoms.

The outstanding features connected with cases of simple milk fever :—

(1) It is a disease of heavy milkers, and particularly of animals of the milk-producing breeds, and of those animals highly fed to produce huge quantities of milk.

(2) It occurs during the most prolific lactation periods of the animal's life.

(3) Animals so affected generally calve, or have calved, quite easily.

(4) It may occur a short time previous to parturition, but as a rule a day or two after parturition.

(5) An animal may go down more than once at the same parturition—she may come out of one attack only to go into another—or there may be a day or two between the attacks.

(6) Under Schmidt's original treatment—the injection of a solution of potassium iodide—animals are slower in recovering than under treatment with air or oxygen.

(7) Under treatment with pure oxygen animals appear to make a slightly more rapid recovery than with air.

The symptoms as seen in atypical case of simple milk fever—

These may be divided into three stages :—

(*a*) A stage of excitement.
(*b*) A semicomatose stage with uneasiness.
(*c*) A stage of complete coma, followed by death.

The stage of excitement.—The animal has an anxious or excited appearance about the eyes. She paddles with the hind legs and is apparently very uneasy. Temperature is generally normal, but may deviate slightly above or below.

The semicomatose stage.—The animal sways and staggers as if she were inebriated. She goes down, but may rise or attempt to rise, only to go down again. The head hangs listlessly, or may be tucked into the side. Often there is a peculiar grunt and grinding of the teeth. She lies very uneasily and passes into a semicomatose condition. The body is quite cold, the temperature is subnormal and the third stage is reached.

The stage of coma.—In this stage the animal, if left alone, stretches out on her broadside, the respirations become shallower and shallower until hardly perceptible, and she sleeps away as it were, and dies without a struggle.

It is convenient here to state the sequence of events in asphyxia as taken from Bainbridge and Menzies' *Essentials of Physiology* :—

"At the outset, carbonic acid accumulates in the blood and excites the respiratory centre, producing hyperpnœa. Towards the end of the first stage the increasing deficiency of oxygen begins to make itself felt, leading to still greater activity of the respiratory centre, and to loss of consciousness.

"In the second stage the lack of oxygen increases the excitability of the whole of the central nervous system, giving rise to general convulsions which are observed; this effect is soon succeeded by paralysis, resulting from prolonged deficiency of oxygen, and ending in death. All these effects are most pronounced when the supply of oxygen is cut off

abruptly and completely. *If the lack of oxygen is brought about gradually the respiratory changes may be comparatively slight.*"

The theory which follows supposes that the metabolism taking place in the mammary gland causes a sudden increase in the output of carbon dioxide. This sudden increase is so great after a period of relative inactivity that the lungs cannot cope with it, and the result is a progressive increase of the carbonic acid content of the blood, *i.e.*, the raising of the (*H*) ion content, producing an acidosis. The first signs of this increase are recognised by the excitability and restlessness of the animal. As the carbon dioxide still further accumulates, semicoma is produced. The milk gland during this time is still being activated by a hormone and such activity calls for oxygen. Gradually general paralysis of all nerve tissue takes place.

The progressive paralysis of the nerve supply to the lungs depletes gradually the very necessary supply of oxygen for the vital processes of the body, and as still further accumulation of carbon dioxide takes place, complete coma sets in, and later, when no oxygen is available, the animal dies.

In Professor Schafer's *Practical Physiology* an experiment on the effect of carbon dioxide on nerve tissue is described. In this experiment nerve tissue is paralysed by the presence of carbon dioxide, and will not carry stimuli.

The constipation usually seen in these cases may be accounted for in the same manner—a paralysis of the nerves controlling peristalsis. In a similar way the accumulation of urine in the bladder may be due to a paralysis of the nerve supply to that organ, so that urine present is not voided.

Here a word about the reaction of blood will not be out of place. The reaction of an aqueous solution depends upon the proportion of the free hydrogen (*H*) ions, and the hydroxyl (*OH*) ions to one another. If the (*H*) ions are in excess the fluid is acid, and if the (*OH*) ions are more numerous it is alkaline. So with blood; if the sodium bicarbonate in blood-plasma remains constant and an increase in the amount of carbonic acid takes place, it follows that the (*H*) ion content of the blood is raised, and we have an acidosis, which will give rise to marked physiological effects in the body.

The theory in relation to the various treatments.—It is well known that pressure on the milk gland inhibits its activity. Schmidt's treatment, and treatment by injection of water, air, or oxygen, all have this effect.

With the stoppage of the activity of the gland the carbon dioxide output at this source is arrested, and the excessive accumulation of this gas in the system is gradually evacuated by the lungs in the normal way. Thus the animal regains consciousness, and the paralysis passes off, providing, of course, that treatment has been undertaken in time.

As the animal returns to normal, the lungs adjust themselves to the extra work thrown upon them. If, however, the animal is an excessively heavy milker she may go down again, and yet again, before this adjustment takes place. The quicker results obtained by the use of pure oxygen, the writer attributes to the fact that absorption of the gas injected actually takes place, and as the theory supposes, oxygen is that which is most needed.

For the mention of the symptoms of milk fever the writer makes no apology, as he considers it necessary for the explanation of his theory.

THE THEORY.—Simple milk fever is a toxæmia caused by a progressive increase of the (*H*) ion content of the blood, this acidosis being produced by the gradual excessive accumulation of carbonic acid in the blood, owing to a sudden great increase in the metabolism taking place in the mammary gland. In short, simple milk fever is "a progressive auto-asphyxiation."

Mechanical v. Horse Transport.

SUPERIORITY OF HORSES.

An experiment of special interest to breeders of horses which has been published recently in the "*Scottish Farmer*" shows conclusively the marked superiority of the horse for transport purposes in comparison with mechanical power. It is stated that Mr. W. Greig, the Superintendent of the Glasgow Corporation Cleansing Department, has, after an exhaustive experiment, prepared an interesting comparative statement of working costs of electric and horse-drawn vehicles, based on an 8-hours day for 313 days per year. The cost of removing the city refuse is 5s. 1¾d. per ton with the electrical vehicle, and 3s. 7d. per ton with the horse-drawn vehicle—a saving of fully 1s. 6d. per ton in favour of the horse. Mr. Greig points out that the experiment was conducted over ground lying within a radius of 1¼ to 1¾ miles of the refuse destructor, and that the shorter the distance the greater the advantage in favour of the horse.

The comparative working costs of electric and horse-drawn vehicles are tabulated as under: Electric: 40s. 11d. cost per day; 5s. 1·375d. cost per hour; 5s. 1·375d. cost per ton; 12s. 9·44d. cost per load; 3·2 loads per day; 8 tonnage per day. Horse-drawn: 18s. 8¾d. cost per day; 2s. 4·09d. cost per hour; 3s. 7d. cost per ton; 6s. 2·9d. cost per load; 3 loads per day; 5·2 tonnage per day.

Other interesting details are given in the following tables:

	Costs per day, 1923-24		
Electric vehicle:	£	s.	d.
Driver's wages, 1s. 3½d. per hour, plus 2½d. per day insurance	0	10	8½
Packer's wages, 11d. per ton	0	7	4
Electric energy, at 1½d. per unit	0	2	11
Oils, waste, etc.	0	0	2
Depreciation 10 p.c. on vehicle (£700), 4s. 5·7d., battery, 6s. 4·7d.	0	10	10·2
Tyres, at ½d. per mile (average mileage 16 miles)	0	0	8
Garaging, £45 per annum; cleaning, £6 per annum	0	3	3·1
Licence, £6 per annum; Insurance, £9 12s. per annum	0	1	0
Repairs: Chassis 2s. 5d., controller 10·7d., battery 4·22d., body 4d.	0	3	11·92
	£2	0	10·72

Horse-drawn vehicle:			
Driver's wages, 1s. 2¼d. per hour, plus 2½d. per day insurance	0	9	8·50
Feeding 2s. 11½d., preparing 5½d.	0	3	5·83
Saddlery, renewal and repair	0	0	3·89
Depreciation: Cost per horse £100, less £4 for cast horse; life of a horse 8 years	0	0	9·81
Depreciation cart	0	0	1
Horseshoeing and V.S. attendance	0	0	8·64
Stabling charges, oils, waste, etc.	0	2	7·08
Repairs to cart (4-wheeler with built cover) £15 per annum	0	1	0
	£0	18	8·75

Mr. Greig, in the course of some conclusions on his experiment, says: "It will be observed that the electric requires a 'packer,' who is paid at the rate of 11d. per ton, whereas the carter attends to the packing of his own vehicle.

"In Glasgow there are 22 electric and 140 horse-drawn vehicles engaged in refuse removal operations. The former are confined to the longer journeys, and from the figures submitted I think it will be admitted on all hands that the horse more than holds its own, even over the longer distances. Tenement dwellings in Glasgow represent, approximately, 80 per cent. of the whole, and in the area involved the average carry is 35 yards. The refuse is upllfted twice a week, and every load passes over the weighbridge at the works, and the contents are accurately weighed. The capacities of the respective vehicles are:—Electrics, 7 cubic yards; horse-drawn wagons, 5 cubic yards. Apart from refuse removal, the horse can be quickly and efficiently turned to other work. For instance, Glasgow experienced three very severe snow storms last Winter, and when such visitations occur we have to rely upon the horse, as the electrics cannot be put to the work of snow removal—all-important work for the time being; the department being also responsible for street cleansing operations. On one occasion in particular the electrics were even unable to continue at refuse removal during a snowstorm, and their return to the garage was only accomplished after considerable difficulty. In conclusion, I might mention that the Cleansing Committee of the Glasgow Corporation believe in purchasing a strong type of animal, and I think the figures shown on the comparative statement will bear out my contention that we get much better results from horse haulage in Glasgow than in other cities and towns in England and Scotland."—*East Anglian Daily Times.*

Poultry Diseases.

Expert Investigation and Control.

(Reprinted from *The Times*).

The menacing spread of certain infectious poultry diseases has long been recognised as among the most important factors affecting the progress of the industry, and an indication of the increasing and more serious attention that is being given to the subject is to be found in a communication received from the Ministry of Agriculture. The Ministry announce that the growing number of birds sent to their veterinary laboratory at New Haw, Weybridge, for *post-mortem* examination, has made it necessary to appoint a special officer to undertake this work. It has been decided too, that a scale of fees shall be charged; these range from 3s. for a single bird to an inclusive fee of 10s. for making whatever number of tests may be required in the case of flocks suspected of being infected with bacillary white diarrhœa. In flocks where this disease exists a special arrangement may be made to have the birds tested for elimination purposes.

The placing of this valuable highly skilled service at the disposal of poultry keepers, on favourable terms, should do much to check the progress of diseases that have become a cause of considerable anxiety, and it should also have the effect of counteracting a great deal of the advice that is based upon *post-mortem* work undertaken by unqualified "experts." It is worthy of note, in the general connexion, that the disease research undertaken at the Ministry's veterinary laboratory, under the National Poultry Institute scheme, has progressed rapidly during the past year. At the last meeting of the National Poultry Council it was reported that useful practical results had been reached in respect to investigations regarding bacillary white diarrhœa, while further experiments were in progress. Another subject of research was avian typhoid. It was also stated that, in addition to this and other research work of importance, no fewer than 1,554 specimens had been examined and reported upon during the latter half of 1924.

It is, however, a disquieting fact that whilst reliable official investigations are making satisfactory progress, there is practically no check upon the spread of disease by unscrupulous dealers and others who undertake the distribution of stock. As far back as November 26, 1923, it was recorded in *The Times* that the Ministry, acting on representations from the Poultry Advisory Committee and the National Poultry Council, had sent a circular letter to local authorities suggesting the desirability of obtaining statutory powers for requiring the inspection of poultry at markets. The decision of the Ministry as to the action to be taken would appear to depend very largely on the attitude of local authorities, and it is understood that the response to their letter was not very enthusiastic. The National Poultry Council now state that several instances in which diseased birds have been sold by dealers and others have been brought to their notice recently. In the absence of any fresh legislation, such as was previously proposed, they suggest that to sell birds that are diseased would seem to be a contravention of existing law, and that those who do so can be held liable for injury and loss. In order that such a practice may be prevented they ask that all cases may be reported to them at 20-21 Essex Street, London, W.C. 2.

Second-class "eating" Horse.

At West Ham Police Court on Monday, May 18th, George Fredk. Marsden, carman, of 7 St. John's Road, Canning Town, was summoned for cruelty to a horse by working it in an unfit state.

George Ingram, horsekeeper, 50 Brent Road, Canning Town, was summoned for causing the animal to be so worked; and George Fox, the owner, 57 Cumberland Road, for permitting it to be worked.

Inspector Ryan, R.S.C.P.A., said that on May 6th he saw the animal being trotted at a fast rate by Marsden. It was very lame, and had a large suppurating wound on the foot. The animal was slaughtered the same day.

Mr. B. Moss, veterinary surgeon, said that when he examined the horse on May 6th he found it very lame, owing to an old-standing wound in the foot. It had been cut out and was filled up with dirt, causing great pain.

Mr. W. King, veterinary surgeon to the owner of the horse, said the animal was not lame when he saw it on the previous Sunday. It had "picked up" a nail, but the wound had healed and the horse was fit to work. The animal was a "shiverer;" that was, it suffered from an affectation of the spine, which made it walk awkwardly.

Mr. A. McCunn, veterinary surgeon to the West Ham Corporation, said there was no sign of lameness when he saw the horse on the 6th inst. After it had been killed witness made a *post-mortem* examination, and found the animal in very fair condition. "It was sent as a second-class horse for food to France," witness added. Being a "shiverer," the animal had an unusual gait, but did not work in pain.

The Magistrate described it as a bad case, and said he was determined to do his best to see that horses in West Ham were not cruelly worked. Fox was fined £5 and four guineas costs; Ingram £3; and Marsden was ordered to pay 4s. costs.

Army Veterinary Service.

London Gazette. War Office. Territorial Army.

May 22nd.—J. Heard to be Lieut. (May 23rd).

The Veterinary Record.

6th June, 1925.

SWINE ERYSIPELAS.

Sir Frederick Hiam has done a public service in so prominently drawing attention to the great need of dealing drastically with the disease, swine erysipelas, which is causing such loss in the country at the present time. We print this week the letter which Sir Frederick wrote to *The Times*, and also an article on the subject written by an expert. We would draw especial attention to the concluding part of this article in which the writer emphasises the points of especial interest to the veterinary surgeon. The loss to the country by death alone is perhaps greater than has been stated, and we would incline rather to accept Sir F. Hiam's estimate in preference, for the reason that since the disease is not notifiable, it is impossible to gather accurate figures to modify the estimates which may be offered by breeders, smallholders, farmers, and veterinary surgeons, of the huge losses which occur during the early summer months. The economic loss is very much greater, for the disease affects the pig industry very prejudicially in that it prevents the marketing of the animals at a suitable period owing to the consequent loss of condition in those which recover. But even worse than this is the permanent damage done to the health of such animals. It will probably be accepted as a fact that no animal is so robust in health after once having suffered from the disease, while many are left with disabilities which render them unfit to resist any further casual illness or accident.

Erysipelas is a disease which apparently can be fairly successfully dealt with by means of the serum vaccine treatment as outlined in the leaflet of the Ministry of Agriculture, and if veterinary surgeons will interest themselves in it, there is a very considerable amount of work to be done that should properly be done by members of our profession. If veterinarians are not thoroughly conversant with the disease, and not ready with their advice and treatment, others will be called upon, and the work will pass out of our hands. We would not wish to insinuate that swine erysipelas has been ignored in the past; we know that it has already received a considerable amount of attention. But it must receive more attention in the future. Research is still being carried out at two or three centres, notably at Cambridge, where Sir F. Hiam is presenting £500 towards the expense of preparing the vaccine. Demonstrations of the disease are to be given at our annual congress, and no doubt the serum and vaccine methods of treatment will be explained, and should prove of very great interest to every country practitioner. Incidentally, Sir F. Hiam is entertaining the members of congress to a garden party. It will be a source of especial gratification to him to know that our profession is interesting itself in and taking steps to combat the disease which he above most other laymen has done so much to overcome.

We should be glad to receive the views of country practitioners and those veterinarians who have had much experience of this disease. The knowledge gained by practical experience in the field is likely to be of exceptional value, and far too little of it is recorded.

Royal College of Veterinary Surgeons.

Annual Election of Council.

The following are the votes cast in the recent election to Council. At the Annual Meeting on Thursday, the President declared the first eight duly elected:—

Name.	*Votes.*
S. H. Slocock	864
F. T. G. Hobday	845
J. McKinna	811
P. J. Simpson	807
W. S. King	752
J. H. Carter	716
Trevor F. Spencer	654
T. Dunlop Young	615
E. Alfred West	551
A. W. Whitehouse	429
C. Blackhurst	344

Meat Inspection and the "National."

It was stated at a recent meeting of the Llandovery District Council in response to an application by the Council for permission to use a stamp for meat-marking, that the Ministry of Health had written stating that upon the Council's two sanitary inspectors qualifying as inspectors to comply with the requirements of the Act they would further consider the application. The two inspectors (Mr. Evan Williams and Mr. Tudor Lewis) informed the Council they would not undertake to do so, and the Council thereupon decided, after hearing a letter from the Veterinary Association, to rescind the appointment of its two inspectors and to invite applications from veterinary surgeons for the position of meat markers and inspectors.

Correction.

The line *Wellcome Research Laboratories, Weybridge,* under June 11th in the Diary of Events, in our May 30th issue, should read *Wellcome Research Laboratories, Langley Court, Beckenham.*

REVIEWS.

Victoria Veterinary Benevolent Fund.

The annual report of this organisation must always have a deep humanitarian interest for our readers, and its perusal should provoke a sense of our corporate and individual responsibility for the well-being of those members of our profession or their dependents who, through no fault of their own, stand in urgent need of pecuniary assistance. For it is evident from these reports that the money given has to be made to go a very, very long way amongst a distressingly large number of carefully selected recipients.

In the report for the year 1924, it is mentioned that this is the third year in which the relief given has exceeded £1,000, but an even graver indication of the volume of distress to be alleviated is the acknowledgment of the Council that it had, with great reluctance, to refuse assistance in many deserving instances, owing to lack of funds. In spite of a welcome increase in membership subscriptions of over £60, the calls on the Fund have been so great that there was a total excess of expenditure over income of £17.

The summary of cases relieved transforms a report into a very "human document" indeed, and of itself constitutes so strong an appeal for support that the response should necessitate the inclusion of a much longer list of subscribers and donors next year.

[An Investigation of the Salmonella Group with Special Reference to Food Poisoning By WILLIAM G. SAVAGE, M.D. (Medical Officer of Health for Somersetshire), and P. BRUCE WHITE, B.Sc. Medical Research Council, Special Report Series, No. 91, 1925, pp. 158. Price 3s. 6d.]

This report deals with the identification and classification of organisms of the Salmonella or Gaertner group, to which nine-tenths of food-poisoning outbreaks are due, and with their distribution in nature and the effects produced in animals by Salmonella infections.

In the first part of the report Mr. White has continued and amplified the serological work of his predecessors, and he presents a clear and closely reasoned account of the genus Salmonella, fully documented by experimental data. In addition to this purely taxonomic work Mr. White has found it necessary to investigate certain more recondite issues arising from it. These are chiefly related to the peculiar modification known as "roughness" to which organisms of this group are liable under cultivation, and to the occurrence and distribution of heat-stable antigens. These studies are peculiarly germane to the subject of food-poisoning, since the toxins of the Salmonella group possess a high degree of thermo-stability and can produce their effects after the destruction of the organisms themselves in the processes of canning food.

In the second part of the report Dr. Savage and Mr. White present a complete conspectus of the genus Salmonella, based on the examination of strains from 161 outbreaks of food-poisoning, with an account of the distribution in nature of the different serological types, so far as this is known. This account is by far the most complete of any yet published.

In the third part the authors discuss the pathology of food-poisoning and the mode of action of the causal organisms—a discussion based on a large amount of novel experimental work. Evidence is adduced of the presence in the food-poisoning bacilli of an irritant substance producing an acute inflammatory condition in the stomach. It is found that this irritant is not merely heat-stable, but that bacilli which have been treated to 100°C. are actually more irritant than when unheated. This action is contrasted with that found in the case of those Salmonella organisms which are not associated with food-poisoning (the paratyphoids).

The report will be followed at an early date by another joint report by the same authors upon the detailed investigation, epidemiological and bacteriological, of 100 actual recent outbreaks of food-poisoning in this country.

CLINICAL AND CASE REPORTS.

Ærotherapy in Veterinary Practice.

By HENRY GRAY.

The pumping of air into the sinuses of the mammary gland in animals suffering from disturbance of the nervous system and associated with hypnosis or coma from unknown causes is a well-established practice.

It is common knowledge to surgeons that when they perform an exploratory laparotomy and discover mesenteric tuberculosis the diseased gland often retrogresses and a recovery is obtained. They attribute this beneficial effect to the air allowed into the abdominal cavity by the operation.

It has recently been asserted that if air is pumped into the lung through a hollow needle passed through the thoracic wall it has a beneficial action in cases of pulmonary tuberculosis.

The veterinary surgeon has a very wide field to test the value of ærotherapy on pneumonia and other complaints, such as blackleg, purpura, or gangrenous septicæmia. His outfit would be simple, the material ubiquitous and the risk *nil*.

He knows the value of air on open wounds, especially when they are exposed to unrestrained daylight or sunlight; and also on cases of putrid pneumonia turned out in the open.

Natural therapeutics are seemingly coming into their own again; they were practised with great success by our fore-fathers. Exercise, living food, open air and sunlight are the fundamental agents to keep the domestic animals and their owners fit. The traditional agriculturist or stockowner had learnt their value from past ages. A new generation has sprung up who only know of balanced rations, vitamins and heliotherapy. With the great spread of so-called education and the progress of modern civilisation, the less intelligence we show. The apparently great benefits we derive from them are counterbalanced by the corresponding evils that follow in their wake.

Coenurus Serialis in the Orbit of a Rabbit.

By J. G. WRIGHT, M.R.C.V.S., Cardiff.

Subject.—A three months old tan rabbit.

On examination, the left eyeball was found to be protruding from the orbit in a backward and upward direction, due to the presence of an enlargement the size of a walnut in the lower half of the orbital cavity. The membrana nictitans was tumefied, but the eyeball appeared normal.

The eye was anæsthetised with codrenine (Parke, Davis and Co.), and the tumefied membrana excised. An incision about three quarters of an inch long was made through the conjunctiva over the enlargement, which was then seen to be a parasitic cyst, numerous scolices being visible.

The cyst was punctured to allow escape of fluid and carefully drawn out. The conjunctiva was

flushed with a solution of chinosol 1/1000 for a few days. Healing quickly took place without pus formation.

There was slight deformity left, as the lower rim of the bony orbit had been forced outward to accommodate the cyst.

The owner of the rabbit possessed no dogs himself, nor had the rabbit been on ground contaminated by dogs. It would appear that some green food must have been contaminated with the eggs of *T. serialis* from an infected dog.

I find that the condition is mentioned in "Veterinary Ophthalmology," by H. Gray.

A Compound Monstrosity.

By S. J. Motton, F.R.C.V.S., Penzance.

The accompanying photograph shows the heads and fore-limbs of a compound monstrosity delivered at full term from an old Guernsey cow. The monstrosity was drawn away with the aid of pulley blocks after the double head had been brought more or less obliquely into the parturient passage. It will be noticed that the ears shown in the photograph were joined except at the tips. The fore-limbs appeared to be normal. The hind-limbs were fixed in a forward direction under the body and they were abnormally short. For a distance of about six inches the skin in the dorso-lumbar region was divided, and the spine, which was arched in this position, bulged through the opening in the skin. The weight of the freak was about that of a normal calf.

DIVISIONAL REPORT.

Southern Counties Division.

Forty-first Annual Meeting.

The forty-first annual meeting of this Division was held at the Royal College of Veterinary Surgeons, 10 Red Lion Square, W.C., on Thursday, March 26th, when the retiring President, Mr. E. Whitley Baker, of Wimborne, took the chair, and the others present included Major-General Sir John Moore, K.C.M.G., C.B. (who gave an address on the need for a Veterinary Research Council), and Messrs. Bullock, Facer (Hon. Secretary), Livesey, Martin, McIntosh, S. H. Slocock, Wood, Wild and J. Willett.

The minutes of the last meeting were taken as read and confirmed.

Apologies for absence were received from Messrs. Samson, Tutt, Parr, Rockett, and Moffett.

Other correspondence submitted included a letter from the N.V.M.A. stating that the Society's resolution recommending the re-introduction of the Tuberculosis Order had been placed before the Council, and that action on the lines set forth in the resolution had already been taken; and a letter from Mrs. Angwin thanking the members for their expression of sympathy with her on the death of her late husband.

The Secretary was instructed to convey an expression of the sympathy of the members with Captain Edie in the loss of his wife.

The Treasurer's report not being ready for presentation, the Hon. Secretary proceeded to give his report for the past year. He was sorry they had to miss their summer meeting, but they had two very good meetings at Winchester and Salisbury. He wished, however, he could get more support from his fellow members in the way of short papers or promises to open discussions at their meetings. They could not hope to always get a professor to give them a paper, but there must be many members who could come forward with a short clinical paper or a demonstration, and he hoped they would try and give a little more help in this direction during the coming year. Their membership remained practically stationary. They had had the pleasure of welcoming two new members, but they had lost one by resignation and one by death. He referred, of course, to the late Captain Angwin, who had preceded him as Secretary. The number of members was 62.

Election of Officers.

The next business being the election of officers, Mr. Whitley Baker expressed the hope that they would appoint as his successor in the chair a real live member, for he could assure them that during the two years he had held the office it had been his friend Mr. Facer who had done all the work.

Mr. Willett remarked that he had been going to propose the re-election of all their officers *en bloc*, but Mr. Whitley Baker reiterated his desire that

they would get a younger member as President, and asked Captain Martin if he could persuade him to accept the office.

Mr. McINTOSH said it was certainly not their President's fault that the past year had not been more successful, but he had filled the chair himself, and he could sympathise with Mr. Whitley Baker in his disappointment. He quite realised that it was difficult some times for the country practitioner to get away, especially when he was single-handed, but he thought a great many more could attend their meetings if only they would make the effort, and if they had a real desire to help forward the profession to which they belonged. It was possible, as Mr. Baker had said, that a little new blood was wanted, and if Captain Martin would only accept the Presidency he was sure they would all be delighted.

Mr. WHITLEY BAKER seconded the nomination of Captain Martin as his successor, and the proposition was then put and carried unanimously.

Captain MARTIN then took the chair and, in thanking the members for the honour they had done him, said it had come as a great surprise to him, and he did not know whether he would be able to fill the office satisfactorily, but he would try and do his best and he could not say more than that.

Hon. Secretary: Mr. Facer (re-elected).

Hon. Treasurer: Mr. Whitley Baker (re-elected).

Vice-Presidents: Major J. Stewart Wood, of Parkstone, and Mr. Whitley Baker.

Council: Messrs. G. W. Bloxsome, W. F. Maynard, J. W. McIntosh, C. H. Sheather, J. Willett, and A. C. Wild. It was decided to hold the next meeting in Bournemouth, if possible towards the end of June.

SIR JOHN MOORE'S RESOLUTION.

Major-General SIR JOHN MOORE, who was invited by the President to address the meeting on the subject of his resolution concerning a Veterinary Research Council (the actual resolution has already been published) said he was glad to have the opportunity of discussing it with them because he thought it was not only a step in the right direction, but that it was a matter of vital importance to them as a profession. When he looked around and saw the encouragement and assistance that was given to other professions and Institutions it distressed him very much to think that they in the veterinary profession were so often left out in the cold, even if they were not wilfully neglected. He did not propose to read his resolution to them because it was a very long one, and was, he thought, sufficiently explanatory in itself, but he would just like to say a few words on the subject of research. These were days of research. They were surrounded by research and they lived, as it were, in an atmosphere of research. During the war—and really as an outcome of the war—a very important department of State known as the Department of Scientific and Industrial Research had come into existence. Then, again, as an outcome of the National Health Insurance Act, a Medical Research Committee was formed in 1914, and was incorporated in 1920 in the present Medical Research Council.

Hitherto most of the research work done in the veterinary profession had been done either by individual effort or on the profession's own initiative, but times were changing, and it behoved them to change their methods with the times. There was no point in the different Research Institutes and Associations working in water-tight compartments. Their utility lay in co-operation, in co-ordination, and in reciprocity not only between themselves, but with other research institutions. Such a Council as he suggested, therefore, became necessary not only to initiate but to direct control and co-ordinate all veterinary research. In other words, it must be a body responsible to the state and to the profession for the efficient carrying on of all veterinary research. In his opinion, if there was no such body the value of their research institutes would be very much discounted, and they would continue to be exposed to the filching process which, he was sorry to say, had been allowed to go on for too long already, and they would continue to play a subservient rôle.

He did not think it was necessary for him to stress the expediency for this Council, because there was ample justification for it in the vast amount of inexplicable disease, the cause of which remained unsolved. Further, the responsibility for the elucidation of those diseases ought to be theirs, and he thought he could say they were quite willing to accept that responsibility if only they were given proper and reasonable means and facilities. Sir John then proceeded to explain his scheme in detail and, at the conclusion of his address, The PRESIDENT said he was sure they all felt very indebted to him for bringing the resolution forward, and that it would mark a very important step in the progress of their profession.

Mr. FACER asked if there was any veterinarian on the Medical Research Council as, while they all wanted to be on friendly terms with the medical profession, and he was pleased to say there was a great friendship growing up between the two professions, and they were working together in many ways, it seemed to him they might run their own Council in this matter.

Sir JOHN MOORE: As far as I am aware there is no veterinarian actually on the Medical Research Council, but Major Dunkin is Superintendent of the Field Laboratories of the Council. If there was, it would not be a Medical Research Council.

Major STEWART WOOD asked if it was proposed to have their own laboratories for research or merely to organise existing laboratories.

Sir JOHN MOORE replied that it was not his idea for his proposed body to carry out any actual research work, but to initiate research and direct and control the research that was going on in the existing institutes and also to collaborate with other research Councils.

Mr. WHITLEY BAKER remarked that he was quite at one with them as to the necessity for carrying out these investigations, but he wondered if they were asking enough in the figures mentioned by Sir John.

Mr. McINTOSH said that his views in connection with this subject were already pretty well known, and it was sufficient for him to say he endorsed every word Sir John Moore had said except, perhaps, in so far as the constitution of the proposed Council was concerned, and that was a matter which did not quite rise on the resolution, since it was the principle at which they were aiming. The constitution of a Council of this kind would be of immense value to the nation as a whole and the general practitioner should, in his opinion, be represented on it. The scientists were all right in the laboratories, but the work in the field was as important, if not more so, as that done in the laboratories. There was also, sometimes, a tendency for the advanced scientists to become narrow in their views, and the general practitioner often had a much wider outlook. He did not think there could be two opinions as to the principle of the idea, and he would like to propose that they heartily support it and send a resolution to that effect to the Council of the Royal College.

Mr. WHITLEY BAKER seconded and, on being put to the vote, this was unanimously agreed.

The PRESIDENT expressed the thanks of the meeting to Sir John Moore for coming to address them on so important a subject.

Sir JOHN MOORE, in reply, said there was no doubt that Mr. McIntosh's remarks were very much to the point. The principle was the thing to establish, and the actual constitution of the Council was a matter which could very well be left to the Council of their College. Personally, he did not think any Council would be complete that did not include the practical side as well as the bacteriological and investigation side. As to any thanks being due to himself for bringing the matter forward, he thought it was one's duty to do everything one possibly could to keep their profession to the front.

The meeting then terminated.

J. FACER,
Hon. Secretary.

CANINE DEFENCE LEAGUE.

The annual report of the National Canine Defence League was presented on May 27th by Sir Robert Gower, M.P., at the annual meeting of the league held at Caxton Hall, Westminster. "During the past year," the report stated, "the forces inimical to dogs appear to have been consolidated and organised, and a policy of elimination has been openly advocated. The constant advocacy of a policy of 'Shoot all dogs on sight' will certainly lead to its daily practice unless we fight it." Sir Robert Gower emphasised the importance of inculcating the virtues of justice and mercy into the minds of school children, and the value of lectures in school on such subjects as the evil of dog chaining. A new dogs' home was to be established at Hampton, Middlesex, as the result of the gift of a house and grounds by Mrs. Hall. Over £1,000 had been spent during the year in paying 3,110 dog licences for poor dog owners. The league was attempting to get a revision of the law by which there is no legal right of appeal against a magisterial order for the destruction of a dog.

HIGH COURT OF JUSTICE.

KING'S BENCH DIVISION.

A Doctor's Conviction of Manslaughter.

REX v. BATEMAN.

(*Before the* LORD CHIEF JUSTICE, MR. JUSTICE SALTER, *and* MR. JUSTICE FRASER.)

The previous week this Court heard the appeal against the conviction and sentence of Dr. Percy Bateman, a medical practitioner at Deptford, who was recently convicted at the Central Criminal Court of the manslaughter of a woman named Mary Ann Harding, the wife of a builder's labourer, and was sentenced to six months' imprisonment in the second division.

On July 23, 1924, Mrs. Harding, a woman aged 33, was about to be confined. Dr. Bateman, who had a panel "slum" practice, was called in. The delivery of the child was very difficult, and, after an hour's strenuous work, the child was born dead. When the afterbirth was removed part of the uterus also came away. Mrs. Harding became very ill. On July 28 she was removed to a hospital, where she died on July 30. The case for the prosecution at the trial was that Dr. Bateman had been criminally negligent and had failed in his duty in failing to send Mrs. Harding to the hospital before July 28. For the defence it was contended that the two rooms in which Mrs. Harding lived were at the top of four flights of stairs, and rendered her removal to hospital most dangerous. Eminent medical evidence was also called to negative the allegation of negligence.

Mr. Norman Birkett, K.C., and Mr. Arthur Davis appeared for the appellant; Mr. H. D. Roome for the Crown.

Mr. Birkett, in opening the appeal, said that the grounds of the appeal were (*a*) misdirection on the law, (*b*) misdirection on the evidence, (*c*) the wrongful admission of evidence, and (*d*) that the verdict was against the weight of evidence. The prosecution had never really suggested any negligence by Dr. Bateman in his actual treatment of Mrs. Harding during the birth, which treatment was effected in a room which was badly lit owing to the incandescent gas mantles being broken. Regarding the suggestion that Mrs. Harding should have been removed to hospital earlier than she was, the course pursued by Dr. Bateman had been justified. In one of the three recorded cases where a uterus had been inadvertently removed the patient lived for 30 minutes, in the second she died on the way to the hospital, and in the third she died 40 minutes after admission. In the present case Mrs. Harding had lived for seven days.

THE TEST OF NEGLIGENCE.

Referring to the summing-up, Mr. Birkett said there was not one word in it which made any distinction between civil negligence and criminal negligence. It might not have been possible to take exception to the summing-up if it had been in a civil action for damages against a doctor. But, as it was a summing-up in a criminal case, the omission was fundamental and was fatal to Dr. Bateman's conviction. In summing-up the Judge told the jury they could only convict Dr. Bateman if he "fell below the standard of skill which is the least qualification which any doctor should have." To speak of degree of skill was quite irrelevant in a criminal case; the question was whether Dr. Bateman had been negligent in exercising such skill as he possessed.

The Lord Chief Justice.—You say, then, that even where a man holds himself out as qualified to perform a difficult and delicate operation he is not to be judged as regards skill by any objective test, but by his skill in the particular case?

Mr. Birkett.—The degree of skill which is the standard by which the jury must judge both civilly and criminally depends in some degree on the person with whom you are dealing. If it is a Harley-street specialist, one standard

would apply ; a different standard would apply to a general practitioner. If a general practitioner acts to the best of his skill, it is no crime if he does not possess quite as much skill as the ordinary general practitioner.

The Lord Chief Justice.—Do you assert as a principle of law that a practitioner is to be judged as to negligence by reference to no general standard of skill, but by reference only to such skill as he possesses in each particular case ?

Mr. Birkett.— I submit the latter.

There was, continued counsel, a vital distinction between civil negligence where the injury was to a private person and criminal negligence where the injury was to the State.

The Lord Chief Justice.—Is there no injury to the State if an unskilled person undertakes to perform a delicate operation and death follows ?

Mr. Birkett.—If a quack holds himself out to do that which he knows he has no skill to do the State would be right in saying that that was a crime ; but here there was a fully qualified medical man doing that which by law he was entitled to do. The mere fact that he might fall below the general skill of the profession has no relation to crime. Where a man has done his best he can never be guilty of manslaughter.

Mr. Birkett also complained that at the trial the deposition of Dr. Bateman in the Coroner's Court was admitted as evidence, although it had not been proved. There was no evidence against Dr. Bateman of negligence in his manipulation which resulted in the uterus coming away with the afterbirth. Reference prejudicial to Dr. Bateman was made at the trial to the fact that when he told the relatives that Mrs. Harding was going to die he did not tell them what had occurred. That was not done from any improper motive, but because it would only distress them and do no good.

The Lord Chief Justice.—Was it not open to the jury to say that the doctor must have known by the amount of force which he had to use that what he had got hold of was not the afterbirth ?

Mr. Birkett.—I submit that there was no evidence to go to the jury.

A Considered Opinion.

Continuing, Mr. Birkett said that the non-removal of Mrs. Harding to the hospital was a carefully considered medical opinion. Her removal at any time would probably have meant immediate death ; at no time would it have been a wise or a safe or a proper thing to do. The peritonitis of which the woman died was coincident with the birth of the child.

Mr. Justice Salter.—How many requests did the nurse make to the doctor that the woman should be taken to hospital ?—Three.

The Lord Chief Justice.—Was she ever asked whether, when she made those requests, she thought that the woman could have gone to the hospital ?—Mr. Justice Shearman, in summing-up, put that point to the jury, that point in favour of Dr. Bateman. The nurse never thought that there was any moment at which she was better.

The Lord Chief Justice.—The removal, so far from being a useful step, would have been a dangerous step ?

Mr. Birkett.—Yes. The two experts who were called said that they would have done exactly the same as Dr. Bateman did. They agreed that her removal would have meant immediate death.

Mr. Justice Salter.—Sir Bernard Spilsbury, on the other hand, said that she might have had just a chance.

The Lord Chief Justice.—The question arises whether a medical man can be convicted of criminal negligence for doing that which two eminent members of his profession say that they would do in similar circumstances. Apparently, the removal of the uterus like this is a very rare thing. Is a man expected to know that if such a rare thing happens all risks must be taken and that the patient must go to the hospital ?

Mr. Birkett.— I submit not.

R. v. Van Butchell (3 C. and P., 629), R. v. Williamson (3 C. and P., 635), and R. v. Spiller (5 C. and P., 333) were referred to.

Mr. Birkett, in continuing his argument, said that there were several inadvertent mis-statements in the summing-up, which worked greatly to the prejudice of Dr. Bateman.

The Lord Chief Justice.—Here was a healthy woman, and the doctor, in delivering this infant, pulled away the uterus. Could not the jury say : "*Res ipsa loquintur*—negligence" ?

Mr. Birkett.— That is the danger which should have been guarded against and rendered necessary by a very careful summing-up.

The Lord Chief Justice.—Might they not legitimately say it ?

Mr. Birkett.—I think that they might say it, but not legitimately. In my submission there was a grave danger to be guarded against—namely, that, in a case which would horrify and shock anyone, there was not a man on the jury who had not been in the position of Mrs. Harding's husband, waiting outside the room and hoping that all would be well. They might reasonably say that, as such a thing did not occur in the ordinary course of things, it must be due to the negligence of Dr. Bateman.

The Lord Chief Justice.—What ought to have been said ?

Mr. Birkett.—I should submit that, after the jury had been directed on the difference between civil and criminal negligence, they should have been warned to put entirely from their minds any thought of convicting Dr. Bateman because the uterus was pulled away.

Mr. Birkett then submitted that, if the case were viewed from every aspect, the final conclusion was that the verdict against Dr. Bateman was against the weight of evidence and unreasonable. The testimony of the experts who had been called completely exonerated Dr. Bateman. The medical profession was called on to confront emergencies at all hours of the day and night. When an untoward event happened and when two of the most eminent physicians in this country said that they would have done what the general practitioner did and that, to do otherwise, would have caused immediate death, to say that the general practitioner was nevertheless guilty of manslaughter would be to place the medical profession in a very hazardous situation which would deter men from entering it.

The Case for the Crown.

Mr. Roome said that the case was put to the jury on the footing that Dr. Bateman might be negligent simply in removing the uterus as he did. Confirmation of that view and evidence that he knew that he had been guilty of negligence was to be found in the fact that he had told the nurse not to tell anyone what had occurred and his failing to report the matter to a hospital or to take any higher medical opinion. Both the experts called for the defence said that they would have called in a second opinion. The only possible chance of saving Mrs. Harding's life was that she should be operated on. The jury was composed only of men because Sir Edward Marshall-Hall, K.C., for the defence, challenged all the women jurors. No one could have had a fairer trial.

The Lord Chief Justice.—I do not follow that. Your last remark seems to suggest that it could not possibly have been to the advantage of the appellant if there had been women on the jury. I can imagine that it might have been to his advantage.

Mr. Roome.—My learned friend did not seem to think so.

Counsel added that the jury were entitled to come to the conclusion that the conduct of Dr. Bateman accelerated Mrs. Harding's death. After a most careful and accurate summing-up the jury convicted Dr. Bateman. There was abundant evidence to support that conviction.

Judgment.

The Lord Chief Justice, in giving the judgment of the Court, said that the charges of negligence made against

Dr. Bateman were, in substance—(*a*) causing internal ruptures in performing the operation of "version"; (*b*) removing part of the uterus with the placenta; and (*c*) delay in sending the patient to the infirmary. In expounding the law to juries on the trial of indictments for manslaughter by negligence, judges had often referred to the distinction between civil and criminal liability for death by negligence. If A had caused the death of B by alleged negligence the plaintiff, to establish civil liability, must prove (in addition to pecuniary loss caused by the death) that A owed a duty to B to take care, that that duty was not discharged, and that such default caused the death of B. To convict A of manslaughter the prosecution must prove the three things mentioned, and must satisfy the jury, in addition, that A's negligence amounted to a crime. In the criminal court the amount and degree of negligence were the determining question. There must be *mens rea*.

In explaining to juries the test which they should apply to determine whether or not negligence amounted to a crime judges had used many epithets, such as "culpable," "criminal," "gross," "wicked," "clear," "complete." But whatever epithet was used, and whether an epithet was used or not, to establish criminal liability the facts must be such that, in the opinion of the jury, the negligence of the prisoner went beyond a mere matter of compensation between subjects, and showed such disregard for the life and safety of others as to amount to a crime against the State and conduct deserving punishment.

If a person held himself out as possessing special skill and knowledge, and he was consulted as possessing such skill and knowledge by a patient, he owed a duty to the patient to use due caution in undertaking the treatment. If he accepted the responsibility and undertook the treatment and the patient submitted to his direction he owed a duty to the patient to use diligence, care, knowledge, skill, and caution in administering the treatment. No contractual relation was necessary, nor was it necessary that the service should be rendered for reward. It was for the judge to direct the jury what standard to apply, and for the jury to say whether that standard had been reached. The jury should not exact the highest, or a very high standard, nor should they be content with a very low standard. The law required a fair and reasonable standard of care and competence. The unqualified practitioner could not claim to be measured by any lower standard than that which was applied to a qualified man. In cases of recklessness juries might distinguish between the qualified and the unqualified man. There might be recklessness in undertaking the treatment, and recklessness in the conduct of it. In addition to those matters, in a criminal case the prosecution must prove that the negligence or incompetence showed such disregard for the life and safety of others as to amount to a crime against the State and conduct deserving punishment.

The Court was of opinion that there had been no misdirection. Mr. Justice Shearman had, however, been invited at the trial to withdraw the first and second charges of negligence from the jury. He declined to do so, and the jury returned a general verdict of "Guilty." In the opinion of the Court there was no evidence to support the first charge (that based on the manner in which Dr. Bateman performed the operation of "version"). A strong defence had been presented on the third charge, and it might well be that the jury relied largely on the first and second charges. If the first charge had been withdrawn it was impossible to say that they would certainly have convicted. For that reason the conviction could not stand.

Solicitors.—Messrs. Amery, Parkes, and Co.; the Director of Public Prosecutions.—*The Times*.

As a step toward the elimination of the scrub bull, there will be included in the Aberdeen Show this year classes for Shorthorn and Aberdeen-Angus bulls which are receiving premiums from the Board of Agriculture for Scotland.

Shaving-Brushes Infected with Anthrax Spores.

"The untimely death of Professor Ellermann from using a shaving brush infected with anthrax spores has led to the publication by the Institute for General Pathology of the University of Copenhagen of an account of the case, and the examination of the brush, by Oluf Thomsen and Vilh. Jensen. Professor Ellermann's illness began on December 17th, 1924, as a small spot on the left cheek. This was followed by much œdema, but without at first any noticeable affection of the general state of health. The brush sent for examination proved to be of a large size model (about 13 cm. long, with handle). It was made to imitate badger, but actually consisted of dyed Chinese horsehair. Bacteriological examination showed that the hairs of the brush were infected with anthrax spores. In spite of the injection of anthrax serum Professor Ellerman died on December 24th. It will be remembered that the first case of anthrax traced to a shaving brush occurred in England in 1915. In that year six cases were reported; in 1916 thirteen cases; in 1917 and 1918 none were reported, but there were fourteen in 1919, thirteen in 1920, and four in 1921. No cases have since been observed in England. Consequently, the number of cases observed in the civilian population in England amounts to fifty, with eighteen deaths. Among the troops in Great Britain from December, 1914, to February, 1917, eighteen cases of anthrax were ascertained; of these, four were certainly due to infected shaving brushes. Among the British troops in France from January, 1915, to February, 1917, there were twenty-eight cases of anthrax, and of these the infected spot was on the cheek, chin, or neck; in no case was it possible to demonstrate that the infection originated from shaving brushes, but this does not prove that it did not, for shaving brushes were issued as part of the equipment. In the British Navy, from December, 1919, to January, 1921, there were six cases, and in two of these the infection might certainly be regarded as due to shaving brushes. A complete account of the cases of infection occurring in England and other countries is given in the article, and it is stated that a considerable number of shaving brushes made of horsehair from China, but falsely labelled, appeared on the market in 1915. The measures taken by the Ministry of Health are related, and the passage (July, 1919) of the Anthrax Prevention Act, which gave the Government power, by an Order in Council, to forbid the importation of suspected goods, is noted. Such an Order was made prohibiting the importation of shaving brushes manufactured in Japan, for it was found that infectious brushes were being imported from that country. This, together with the destruction of a large number of shaving brushes suspected of anthrax infection, appears to have prevented the occurrence of further cases. An interesting point about the case recorded by Thomsen and Jensen is that even where there is reason to suppose that disinfection has been carried out there is no guarantee whatsoever of its efficiency; private disinfection is therefore an additional safeguard. This article, written in excellent English, is published, together with several other articles in English, in *Acta Pathologica et Microbiologica Scandinavica*, vol. i., Fasc. 2, 1924."—*British Medical Journal*.

R.S.P.C.A. Annual Report.

In the annual report of the Council of the R.S.P.C.A., presented at the 101st annual meeting held on May 27th, it was stated that in endeavouring to suppress the barbarous amusement of rabbit coursing they had worked gradually. Their first step was to secure the passing of a short Act which enacted that rabbits which were coursed must have a reasonable chance of escape. That bill was passed, and they had secured convictions against promoters of rabbit coursing meetings. Their next step was to suppress rabbit coursing altogether, and this they hoped to do with the aid of a bill which, originally introduced during the last Parliament by Mr. Isaac Foot, and again recently introduced, would make it illegal to hunt or course any animal kept in confinement and specially released for that purpose. When this bill passed it would put an end to rabbit coursing and the hunting of carted deer.

Lord Lambourne, in support of the report, said that although a few of their subscribers considered the council's action in regard to the Rodeo unnecessary, he knew the majority of their supporters agreed that they did right. The number of butchers, slaughtermen and others engaged in the slaughter of animals for food who had been won over to humane methods of slaughter had increased to a most encouraging extent. Active educational work in preparing the country for a universal adoption of humane methods was of great importance. Regret was expressed that the export of horses for butchery to the Continent had not yet been settled in the only way which would give them all satisfaction—that was by its abolition and by the substitution of a carcass trade. Lord Lambourne appealed to all to help the society to prevent or minimise the injury to dogs, cats, and other animals by motors on the roads, a subject upon which the council was collecting evidence.

Miss Cole said the horse traffic was worse this year than last year. So bad was it that people were found buying food for the animals until found out, and bribing men to give it to the poor beasts. When the present inquiry was over it would be worse still.

The financial statement showed that the total income for 1924 was £123,748, and the total expenditure £97,683.

A long discussion took place with regard to a proposal by Miss Edith Ward that a Bill should be promoted making the use of humane killers compulsory.

Lord Danesfort moved as an amendment an expression of confidence that the council would at the earliest opportunity, when the time was ripe for compulsory legislation, energetically support such legislation, believing that only an effective Act of Parliament would secure a uniform adoption of humane methods.

The amendment was carried by 29 votes to 23.

The opinion is expressed by the Cirencester F.U. that, where a farmer can obtain a certificate from a veterinary surgeon declaring his flock to be free from disease, such flock should not be subjected to compulsory double dipping within fourteen days.

A Chippenham reader, tells *The Agricultural Gazette*, that one of his cows was tied up in a house next door to a sow and her family. One of the little pigs left its mother and always sucked the cow (who was quite willing), becoming nearly twice the size of its brothers and sisters.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest in these columns

Diary of Events.

June 10th—Meeting of the Lancashire Division at the Grand Hotel, Aytoun Street, Manchester.

„ 11th—Meeting of the Central Division at the Wellcome Research Laboratories, Langley Court, Beckenham.

„ 11th—Meeting of the Lincolnshire and District Division at Peterborough.

„ 19th—R.A.V.C. Annual Dinner, Hotel Cecil.

July 2nd—R.C.V.S. Annual Dinner, Hotel Victoria.

We have again had recourse to the use of the red wrapper to the *Record* as a reminder that its recipient has not paid his subscription to the Association for the current year. Members who have thoughtlessly incurred so violent a visitation are also reminded that the despatch of the paper to them ceases with the issue of June 27th, if their subscriptions remain unpaid at that date.

Foot-and-Mouth Disease.

Lord Strachie called attention in the House of Lords on May 27th, to the Report of the Departmental Committee on the Outbreak of Foot-and-Mouth Disease in 1923-24. He said that the Report was feeble, indecisive, and inadequate. There was a strong feeling among farmers that steps should be taken to burn straw which came into the country from infected areas.

Lord Bledisloe (Parliamentary Secretary, Ministry of Agriculture) said that it was only fair to say that the Report had only been issued during the last two or three months. It was very voluminous, and it was under most careful consideration by the Ministry. Not only were they much impressed by the value of many of the recommendations made in the Report, but there was every chance that many of them would be accepted by the Department and put into operation. The Government had drafted a Bill which would shortly be introduced, providing that the county councils and the county borough authorities should, through a joint committee of both bodies, have jurisdiction in the counties in regard to foot-and-mouth and other serious contagious diseases. That would rule out all the borough authorities for this purpose. The inspectorate of the Ministry had been raised from 80 to 100, thus rendering it less necessary to employ private practitioners. There was every prospect of the railway companies taking more drastic measures for the disinfection of trucks. At the end of April last year there were sixty-three outbreaks of foot-and-mouth disease, in which 1,456 cattle, 1,690 sheep, and 724 pigs were slaughtered. In April last, however, there were only two outbreaks, with sixty-nine cattle and forty-five sheep slaughtered. Considering the prevalence of the disease

in certain other countries, we could congratulate ourselves that we were now getting it well in hand, and there was reason for thankfulness that the policy of slaughter was not abandoned. The Departmental Committee which was conducting research work, was expected to present an interim report in the next few weeks.

Clean Milk Competitions.

Clean milk competitions are, says *The Times*, multiplying with a rapidity that augurs well for the future of the milk supply as regards purity and quality. The report of the Somerset County competition in the year 1924-25 (Somerset Farm Institute, Cannington, near Bridgwater) contains interesting particulars of the work being done in that important dairying county to raise the standard quality of the milk. The prize scheme was generously supported by the buyers of milk, and also by the producers. Of the latter upwards of sixty competed, and the fact that about fifty competitors reached at least a Grade A standard during the last month of the competition testified to the beneficial effect of the contest, as well as to the readiness of farmers to place on the market a clean and wholesome article. A similar competition is to be conducted in 1925-26.

"Photographic Signposts."

This year's booklet issued by Messrs. Burroughs Wellcome and Co., under the above heading is a story of the usefulness of 'Tabloid' Photographic Chemicals. Part I. is a historical survey starting from 1910 and illustrated by a number of interesting photographs reproduced in black, sepia, blue, green and yellow. Part II. comprises practical photographic signposts which point out the right roads to success in exposure, development, toning, intensification, reduction and the new technique of desensitising so that development can be carried out by subdued white or yellow light even when using colour-sensitive plates.

The booklet will be sent post free to all readers mentioning this paper and applying to Burroughs Wellcome and Co., Snow Hill Buildings, London E.C. 1.

"It is a happy coincidence that Mr. Munnings, who is famous as a painter of racehorses, should be elected R.A. on Derby Day. He is a Suffolk man, born forty-six years ago, and was elected A.R.A. in 1919. In this year's Academy he has a picture, 'The Whip,' in a sunshot wood, and a mob of horses entitled 'The Coming Storm.' In the Tate Gallery he is represented by 'Epsom Downs: City and Suburban Day.' Among his pictures in past Academy exhibitions will be particularly remembered 'The Prince of Wales on Forest Witch,' 1921. His 'Changing Horses,' a brilliant presentation of a lady changing her mount in the middle of a hard run, received the gold medal of the Paris Salon. During the war Mr. Munnings was attached to the Canadian Cavalry Brigade in France, and painted a large number of pictures for the Canadian Government. He is also fond of painting gipsies, and earlier in his career found many subjects in rough farm horses and ponies, as well as cattle."—*The Times.*

It is urged by Northamptonshire farmers that, immediately after the issue of a Foot-and-Mouth Disease Order the Ministry's officer in charge of the outbreak should send a telegram to every policeman in the county, informing him of the list of scheduled parishes in the area.

CORRESPONDENCE.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.
All correspondence must bear the name and address of the contributor for publication.
The Editor does not hold himself responsible for the opinions of his correspondents.

Conflicting Veterinary Evidence.

To the Editor of the Veterinary Record.

Sir,—In this week's issue I note a letter from Mr. J. W. Rainey *re* the above. I cannot agree with him in respect to the Highgate Police Court. I have always found the veterinary surgeon at that Court most fair and just. Considering I have had over thirty years' experience of London Police Courts, I do think it only right to speak because I have always received justice, which is what one only asked for when defending cases.—Yours faithfully,
Sidney H. Nye.

Loughton, Essex,
May 27th, 1925.

To the Editor of The Veterinary Record.

Sir,—In the last issue of the *Veterinary Record* Mr. W. T. Reid, of Worthing, makes a very good suggestion. I add that the Council of the R.C.V.S. might appoint a delegate to attend any of the Metropolitan Police Courts in London during the hearing of cruelty cases, not only to hear the evidence, but also to see the animal subject of the case.—Yours faithfully, C. A. Malvis.

(*Veterinary Surgeon generally called by the Highgate and Clerkenwell Police Courts*).

London,
June 1st, 1925.

Lamb Dysentery.

To the Editor of the Veterinary Record.

Sir,—The enclosed cutting appeared in the *Newcastle Daily Journal and Northern Star* of the 2nd May and, as it stands, appears to require amplification.

Mr. Gaiger is reported to have expressed the opinion that lamb dysentery is now fully understood and implies that it need no longer be considered a serious menace to sheep farmers in the North, provided they take such precautions as he has outlined.

From recent experience in the affected areas it would appear that on some farms at least where the recommendations made by Mr. Gaiger are observed with scrupulous detail the losses from this disease have not shown any marked decrease. From observations which I have been able to make in Northumberland I have been unable to persuade myself that there was any evidence of a diminution in the mortality even as a result of a combination of the hygienic measures recommended by Mr. Gaiger and the use of serum. If this experience should be more than local it would appear that further efforts in connection with preventive measures are indicated, especially since the occurrence of ulcers in the intestines of still-born lambs has been reported by competent observers. It seems to me that until this and other points of difficulty have been elucidated it is premature to describe the disease as being no longer a mystery.—I am, Sir, yours faithfully, T. J. Bosworth.

Institue of Animal Pathology,
University of Cambridge,
28th May, 1925.

The following is the article referred to:—

Lamb Dysentery.

Immunity by Proper Sanitation.

A Triple Serum.

We are indebted to Professor Gaiger, of the Animal Diseases Research Association, Glasgow, for the following notes upon lamb dysentery:—

Dysentery is as rife amongst the lambs this year as ever it was, and on many farms the losses have been serious, about one-third of the lamb crop having been lost.

The problem seems to be largely one of farm sanitation, and not until farmers appreciate this more fully will the disease be got under control.

In the booklet upon this disease, published by the Animal Diseases Research Association, the nature of the trouble is fully brought to light. It was in the research laboratory of this association that the causal organism was discovered and the disease shown to be due to soil bacteria.

The primary causal germ is a virulent strain of the bacillus coli, which sets up a catarrhal condition of the young lamb's bowel and allows other common soil bacteria to penetrate the delicate intestinal wall and cause ulceration. The whole system of the lamb becomes invaded by these bacteria, and death quickly ensues.

Professor Gaiger tells of many curious fallacies held as to the manner of the infection of the lamb, including the belief that the lamb is born infected or that the infection is in the ewe's milk. He states that it is a common practice, in twinning a lamb, to make use of the skin of the dead lamb to deceive the ewe into thinking the new lamb is her own. Covering a healthy lamb with a skin smothered in the excrement of the dead lamb is more than enough to convey infection, if the lamb is under two weeks old.

Infection after Birth.

It has been conclusively proved that lambs born on infected farms are born free of the disease, but pick it up immediately after birth, either from direct contact with the infected pasture or from the soil-contaminated udder of the ewe. Disease so contracted may prove fatal in twelve hours.

In the A.D.R.A. laboratory, the question of prevention of the disease has been very carefully studied. Great emphasis has been laid upon the need of early recognition of the first cases occurring upon a clean farm so that drastic measures, such as are urged in the pamphlet, may be taken. It is folly to conceal the disease as so many do for five or six years till the farm is saturated with infection and then loudly call for scientists to help.

It seems to take about fifteen years for the disease to die a natural death on any one farm, that is to say for the stock and their descendants to acquire an immunity. One of the gravest features of the present outbreaks is their tendency to spread to clean farms.

Sanitation Measures.

For those who are already deeply involved with the disease, research workers are endeavouring to do something to minimise the great loss of lambs. Flockmasters cannot do better than put into force the strict sanitation measures recommended in the pamphlet.

Experiments are being continued at artificial immunisation by means of serum and vaccines.

Inoculation of new born lambs with serum is being pursued as a more hopeful line of investigation. For this season an anti-serum has been prepared against the three principal bacteria which kill the lambs, namely the bacillus coli, the vibrion septique and the bacillus welchii.

This triple serum is more likely than anything else which has previously been used to save the lives of a proportion of the lambs. No serum, or indeed any laboratory product, need ever be expected to act miraculously and save them all.

"No Longer Mysterious."

If these experiments should show that a proportion of lives can be saved by a laboratory product, it does not justify the farmer in neglecting to do any part of the recommended sanitary measures. No lambs need ever be expected to live on farms which have infection thrust upon them in the way one sees this done.

Lamb dysentery is now thoroughly understood. The day is past when farmers need refer to it as "the mysterious lamb disease." What is urgently needed now is the better education of the farmer concerning the facts of the disease, which years of research have brought to light.

It will interest farmers to know that several flockmasters whose farms were badly infected, adopted the sanitary measures, which have been recommended, and have now reported that they no longer have any dread of the disease since the number of cases has been reduced to a negligible quantity.

To the Editor of The Veterinary Record.

Dear Sir,—With reference to the resolution proposed by me regarding a Veterinary Research Council, and my remarks at the meeting of the Royal Counties' Division to the effect that the North of England Division at its meeting at Newcastle-on-Tyne on the 28th February, 1925, had ordered the resolution to lie on the table (vide *Veterinary Record* of 11th April, 1925, under heading Divisional Reports), I have now heard from the Honorary Secretary, who makes it quite clear that an erroneous impression has been conveyed to my mind by the imperfect report as to the action taken. I think, therefore, in fairness to the North of England Division, that it is necessary that I should revise my remarks in the light of what transpired at the meeting. I understand that the resolution was not discussed at the meeting for the reason that time did not permit, and that it was felt that the measure was too important to be dismissed without careful consideration. In effect, it was remitted to the Council for its consideration and a recommendation entirely favourable to the resolution was adopted, and to be placed before the Divisional Meeting on 30th May.

I trust you will kindly permit me personally to make this explanation as soon as possible, and to remove any incorrect impression which the bare report of the previous meeting of the North of England Division may have conveyed.—Yours truly, J. Moore.

Hampstead,
31st May, 1925.

The Exportation of Horses.

Sir,—The proving of cruelty depends on corroboration of facts by unbiassed persons and not on literature circulated by people going about trying to detect cruelty. All reasonable men and women are desirous of stopping cruelty, but perhaps it is useless remarking that many normal people think that Mr. Fairholme and his Society have not yet proved cruelty as far as France and Belgium are concerned. Naturally the French and Belgians will resent the interference of the emissaries of the R.S.P.C.A. just as we should resent French and Belgian interference on this side; that is why I write that *if cruelty exists there* it is a matter for the French and Belgian authorities to deal with, and Mr. Fairholme and his rich Society can best aid in the matter by bringing relevant facts before the French and Belgians, and supporting them by evidence there, by educational propaganda and possibly, and if necessary, in enlightenment and progressive legislation. Unless he and his Society can get the goodwill and support of the French and Belgians in the matter it is difficult to see how anything more will be seen than the unedifying process of flogging a dead horse. We all are waiting for proved facts from Mr. Fairholme that horse exportation to the Continent is cruel, but so far all we seem to have got is a good bit of froth, and not much substance.—Yours faithfully, G. Mayall.

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